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ABSTRACT

Higher-order confirmatory factor models positing one, two, and three higher-order factors were tested using class-averaged responses to the student rating instrument, Students' Evaluations of Educational Quality (SEEQ), developed by Marsh (1987). Three higher-order factors, Presenter, Rapport, and Regulator, were consistent across a data sample of over 6,322 classes of undergraduates in representing 8 distinct SEEQ first-order factors. The three higher-order factors were found to be stable across classes that were different in terms of academic discipline (Social Science, Business, Engineering) and instructor level (Full Professor, Associate Professor, Assistant Professor). The study results supported the three higher-order factors as potential composite measures of college instruction for practical purposes in faculty teaching evaluation. Four tables and one figure present data; an appendix presents the survey form. (Author/SLD)

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ED 372 110

Higher-Order Factor Analysis of Multidimensional Students' Evaluations of Teaching Effectiveness

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Abstract

Higher-order confirmatory factor models positing one, two, and three higher-order factors were tested using class-averaged responses to the student rating instrument developed by Marsh (1987) Students' Evaluations of Educational Quality (SEEQ). Three higher-order factors Presenter, Rapport, and Regulator were consistent across a data sample of over 6,322 classes in representing eight distinct SEEQ first-order factors. The three higher-order factors were found stable across classes different in terms of academic discipline (Social Science, Business, Engineering) and instructor level (Full Professor, Associate Professor, Assistant Professor). The study results supported the three higher-order factors as being potential composite measures of college instruction for practical purposes in faculty teaching evaluation.

Student ratings have been widely used as a measure of teaching effectiveness in universities and colleges. Student ratings of their instructors and courses have gained widespread accertance over many other available evaluation methods such as those of faculty self-evaluation, ratings by former students, peer reviews, and judgments of trained observers. Student ratings continue to be popular. A recent survey of 600 liberal arts colleges by Seldin (1993) reported that the use of student ratings in these colleges has increased from 29 percent in 1973 to 68 percent in 1983 and to 86 percent in 1993. In spite of its popularity, the use of student evaluation for summative purposes in personnel decision involving salary, tenure, and promotion has not found general agreement.

Many researchers (e.g., Abrami, 1989; Braskamp, Brandenburg, & Ory, 1984; Centra, 1977; Doyle & Whitely, 1974) have favored the use of global student ratings (overall instructor effectiveness or overall course effectiveness) for personnel purposes. Abrami (1989) argued that teaching is a unitary construct and student ratings of teaching effectiveness should be represented by a single or global index. Braskamp et al. (1984) suggested using global, high inference rating items for personnel decisions and specific, low inference rating items for diagnostic feedback and other non-personnel related purposes. Centra (1977) and Doyle and Whitely (1974) endorsed the use of global ratings for faculty tenure and promotion decisions to

the extent that the global ratings are valid criteria of instructional effectiveness and bear a moderate relationship with student learning. Other researchers (e.g., Feldman, 1976; Kulik & Kulik, 1974; Marsh, 1987; McKeachie, Lin, & Mann, 1971) have supported the view that students' evaluations of teaching effectiveness are multidimensional. Marsh (1987) has argued that teaching is multifaceted, e.g., a teacher might be well-organized but lack enthusiasm. Student ratings, like the teaching they represent, should be multidimensional. According to this view, any instrument that focuses on a single aspect of teaching is likely to be inadequate (e.g., Barnes & Barnes, 1993; Murray, Rushton, & Paunomen, 1990).

In a survey of experts in student evaluation, Johnson (1989) found an evenly split opinion from the experts concerning the use of student ratings for personnel decisions. In faculty evaluation, administrative committees commonly decide the quality of a faculty teaching effectiveness on a single continuum from poor to excellent. This common practice has raised some concerns that administrative committees, unlike researchers, are not well trained to interpret student evaluation data presented in a profile of multiple scores. The common practice of personnel committees makes it more desirable to summarize student information into a single or fewer composite scores. Several methodological alternatives for summarizing multiple scores have been suggested in the literature. One

alternative is to derive differential weight for each score in a multidimensional profile such that an overall weighted average score can be obtained (Abrami, 1985; Marsh, 1991). This overall weighted score can then be used as a single index for teaching effectiveness. Another alternative is to use factor analysis to probe the possibility of higher-order factors which are defined as a composite of two or more first-order factors. Higher-order factors are potentially more stable constructs and easier to interprete than the multitude of first-order factors. As a composite, higher-order factors give insights into the structure of latent variables which are normally not available with first-order factors.

The purpose of this study is to illustrate the methodological alternative of confirmatory factor analysis (CFA) in testing higher-order factors of a multidimensional rating instrument that was developed using Marsh's (1987) Students' Evaluations of Educational Quality (SEEQ). A comprehensive review of the research that led to the design of the SEEQ survey has been summarized by Marsh (1987). SEEQ is an evaluation instrument designed to measure the multiple aspects of teaching effectiveness at the university level or in the college classroom. Numerous studies using exploratory factor analysis (e.g., Marsh, 1991; Marsh & Hocevar, 1991) have shown that responses to the SEEQ instrument were consistent in representing nine distinct factors of teaching effectiveness: Learning/Value,

Instructor Enthusiasm, Organization/Clariry, Breadth of Coverage, Group Interaction, Individual Rapport, Examinations/Gradings, Assignments/Readings, and Workload/Difficulty. These so-called SEEQ first-order factors are known to be highly correlated. The correlations of these first-order factors can in turn be factor analyzed and the resulting factors would be termed "second-order factors". Second-order factor analysis has not been frequently applied and is not widely known and understood (Thompson & Borrello, 1992).

The first higher-order analysis of the SEEQ instrument was conducted by Marsh (1991) using responses to the instrument survey from 500 classes in the Social Science Division. Four higher-order models positing one, two, three, and four second-order factors were hypothesized and tested using the covariances of nine SEEQ first-order factors. The model with four second-order factors was shown to fit the data better and explain about 75% of the variance in the first-order factors. The four second-order factors identified by Marsh (1991) with their cluster of first-order factors were: Presenter (Learning/Value, Instructor Enthusiam, Organization/Clarity, Breadth of Coverage), Rapport (Group Interaction, Individual Rapport), Course Materials (Examinations/Gradings, Assignments/Readings), and Workload (Assignments/Readings, Workload/Difficulty). Another higher-order factor analysis of the SEEQ responses was performed by Vogt and Hocevar (1993) with a sample of

over 15,000 classes in six academic disciplines (Communication, Journalism, Business, Social Science, Engineering, and Political Science). Across the six academic disciplines two second-order factors were used to summarize five first-order factors with Learning/Value, Organization/Clarity, Breadth of Coverage forming the first second-order factor and Group Interaction and Individual Rapport forming the second-order factor. The two second-order factors identified by Vogt and Hocevar (1993) exhibited similar pattern with Marsh's (1991) two second-order factors: Presenter and Rapport. These two factors Presenter and Rapport have been consistently identified as dominant characteristics of good teaching (e.g., Bendig, 1953; Creager, 1950; Finkbeiner et al., 1973; Frey, 1978; Hartley & Hogan, 1972; Isaacson et al., 1964). The factor Presenter reflects the overall ability of the instructor in stimulating student learning through skillful presentation of materials, broad coverage of subject matter, and clarity in organizing his/her course. The factor Rapport is equally well supported in the literature. The interaction of the instructor with students and his/her personal attitude toward students constitutes an important characteristic for effective teaching.

In deriving higher-order factors, Marsh (1991) and Vogt and Hocevar (1993) differed in their analysis of the SEEQ rating items. While Marsh's (1991) incorporated all 35 SEEQ items in his higher-order models, Vogt and Hocevar (1993)

used only 20 of the 35 items. The first-order factors that were excluded by Vogt and Hocevar (1993) had exhibited patterns of inconsistent loading on second-order factors in a preliminary analysis. Specifically, according to Vogt and Hocevar (1993), factors relating to the instructor or controlled by the instructor (presentation skill, course organization, individual rapport, group interaction, instructor enthusiasm, breadth of coverage) were stable components for two higher-order factors. Factors that were perceived as partially related to the instructor's ability and influence in the classroom (examinations, assignments, workload difficulty) were not stable components for the positing higher-order factors.

Method

Sample

The sample for this study was obtained from responses to the SEEQ survey instrument from approximately 7,407 undergraduate classes at a large private university in the United States between 1980 and 1990. Classes with incomplete responses and fewer than ten students were excluded from the data analysis. The final sample for the study consisted of 6,322 classes with the unit of analysis being the class-average ratings across all students in the same class. Classes were further divided into separate subgroups according to academic division and instructor rank. Three academic subgroups (Social Science, Business, Engineering) and three instructor subgroups (Assistant

Professor, Associate Professor, Full Professor) were constructed from the total sample (Table 1).

Insert Table 1 about here

Measures

The SEEQ has 35 rating items with scales of "1= Very Poor" to "5= Very Good" (Appendix A). Clusters of these items are expected to load on the nine factors as following: Learning/Value (item 1-4), Instructor Enthusiasm (item 5-8), Organization/Clarity (item 9-12), Group Interaction (item 13-16), Individual Rapport (item 17-20), Breadth of Coverage (item 21-24), Examinations/Grading (item 25-27), Assignments/Readings (item 28-29), and Workload/Difficulty (item 32-35). The form has two global rating items with item 30 measuring overall course effectiveness and item 31 measuring overall instructor effectiveness.

To evaluate the loadings of the measures on the separate first-order factors, a nine-factor measurement model with all 35 items was estimated from the sample of the total group. The results showed that the interfactor correlations were all high as expected except those for the Workload/Difficulty factor. The mean correlation between Workload/Difficulty and all other factors was .130 while the mean correlation of all eight factors together was .758. Based on this finding, the measurement model was re-estimated with 31 items excluding the Workload/Difficulty

factor. The mean correlation for all eight factors in the re-estimated model remained the same (.759). Thus, the removal of the Workload/Difficulty factor had no residual effect on the intercorrelation of the remaining factors in the measurement model.

The reduced eight-factor measurement model was once again re-estimated but this time with only 29 items. The global item 30 was prevented from loading on factor Learning/Value and global item 31 from loading on factor Instructor Enthusiasm. Without the two global items, the mean interfactor correlation dropped slightly to .743 from .759. This 2% decrease in interfactor correlation indicated that the global items had only negligible unique effect in the measurement of the first-order factors. From this evidence, the more parsimonious eight-factor model with 29 measured items was adapted as the final measurement model for testing higher-order factors.

The model for higher-order factors is a LISREL structural submodel 3A (Joreskog & Sorbom, 1989). The structural model is a second-order factor analysis model which simultaneously estimates the measurement of the latent variables and their structural relationship to each other. For model specification the following matrixes are required: LAMDA Y as the matrix of first-order factor loadings, PSI as the matrix of first-order factor variance-covariances, GAMMA as the matrix of second-order factor loadings, PHI as the matrix of second-order factor variance-covariances, and

THETA EPSILON as the matrix of error/uniquenesses in measurement. Seven 29x29 sample covariance matrixes - one for the total group and one for each of the six subgroups - were the basis for estimating of higher-order factors.

Results and Discussion

SEEQ Measurement Model

A prerequisite for higher-order analysis is the adequacy of the measurement model which represents the measured portion of the total model. If the measurement of the first-order factors is weak or inadequate then the higher-order factors which are hypothesized to represent these first-order factors would be inconsequential. The fit of the measurement model provides an indication of how well first-order factors are represented by the sample data. A number of fit indices are available in the LISREL output: chi-square (χ^2), goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI). Two additional fit indices were included in the model fit assessment: the Bentler and Bonett's normed fit index (NFI) and the Tucker-Lewis index (TLI)(Gerbing & Anderson, 1992). Results of these fit indices are presented in Table 2.

Insert Table 2 about here

On the basis of the null model, the SEEQ eight-factor measurement model represented an substantial improvement in incremental fit. Across the total group and all six

subgroups the NFI index varied from .894 to .912 and the TLI index from .880 to .902. Together, these two indices suggested that the eight-factor model provide an acceptable fit to the sample data. The equally strong fit for the total group as well as for each of the six subgroups demonstrated that the SEEQ first-order factors were generalizable across classroom conditions differing in terms of academic discipline and instructor level.

SEEQ Higher-Order Factor Models

Three higher-order factor models were tested in this study. The first model posited a global factor in which all eight first-order factors were constrained to load on one single second-order factor. The second model posited two higher-order factors similar to Marsh's (1991) two second-order Skill and Rapport factors. The third model posited three higher-order factors similar to Marsh's (1991) three second-order factor model Presenter, Rapport, and Regulator. Existing theory and knowledge in student evaluation research were the basis for postulating these higher-order models and were briefly reviewed by Marsh (1991). Each of the three higher-crder models was estimated using samples from the total group and from each of the six subgroups. Two goodness-of-fit indices are used to assess the fit of the higher-order models: the Tucker Lewis index (TLI) and the Relative Noncentrality index (RNI)(Table 3).

Insert Table 3 about here

The fit of the model with three higher-order factors was clearly better than the fit for the other two higher-order models. Loadings on the three higher-order factors were consistently high. The total group had a mean loading of .891. Among the six subgroups, the business subgroup showed the lowest mean loading (.886) and the associate professor subgroup the highest mean loading (.895). These high factor loadings confirmed the stability of the factor structure underlying the three higher-order factors. The equally strong and consistent patterns of factor loadings in the six different subgroups provided supporting evidence for the generality of the higher-order factor structure across different acdemic discipline and classroom instruction analyzed in this study.

Given the adequate fit of the model positing three higher-order factors, a key issue of interest was whether these higher-order factors were well-defined and easily interpreted. A high residual variance in first-order factors would mean too much information were left unaccounted for by the higher-order factors. A high shared variance between two higher-order factors would be incompatible with the existence of the higher-order factors as distinct latent construct. The PSI matrix of first-order factor residual variances showed that for the total group

and subgroups about 20% of the variance in first-order factors were left unaccounted for by the positing higher-order factors. The shared variances of these higher-order factors were obtained using the results in the PHI standardized matrix of second-order factor correlations (Table 4).

Insert Table 4 about here

The mean of higher-order factor correlations for the total group was .906, for academic subgroups .903, and for instructor subgroups .905. The square of these correlations provided a basis for estimating the amount of common shared variance of the higher-order factors. For the total group the estimated shared variance was 82%, for academic subgoups 81%, and for instructor subgroups 82%. These extremely high shared variances suggested that the higher-order factors were not well differentiated as distinct latent construct of student ratings of teaching effectiveness.

The results of this study have confirmed previous findings that the SEEQ specific dimensions of student ratings of classroom instruction could not be summarized in terms of a few composite scores without loss of much significant information. Even though three second-order factors have been consistently identified across a variety of classroom conditions, the second-order factors were accounted for about 80% of true score variance in the

underlying first-order factors. The very high intercorrelation between the second-order factors suggested that these factors could be underlied by a third higher-order factor. This plausible alternative has not been explored in this study.

The importance of higher-order factor in understanding of how specific dimensions of student ratings relate to the overall quality of classroom teaching requires further inquiry. If higher-order factors are to be incorporated as substitution for the multitude of first-order factors into personnel decisions for ease of decision making, current knowledge in students evaluation of teaching effectiveness can be advanced with the applicatiom of empirical assessment methods like higher-order analysis in testing model of theoretical interest.

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Table 1

Total group and subgroup samples

	Academic subgroup			
Instructor subgroup	Soc	Bus	Eng	Total
Assistant Professor	814	858	501	2,173
Associate Professor	981	685	388	2,054
Full Professor	952	411	732	2,095
Total	2,747	1,954	1,621	6,322

Note. Soc=Social Science, Bus=Business, Eng=Engineering.

Table 2

Goodness-of-fit indices for SEEQ measurement model

	Total group and subgroups						
	Tot	Soc	Bus	Eng	Full	Asso	Assi
χ^2	29,388	12,642	11,145	7,362	9,911	10,748	10,401
df	349	349	349	349	349	349	349
GFI	.740	.741	.705	.738	.738	.720	.730
AGFI	.676	.677	.632	.674	.674	.651	.664
NFI	.911	.909	.894	.912	.908	.902	.909
TLI	.897	.896	.880	.902	.896	.889	.897

Note. Tot=Total group, Soc=Social Science subgroup, Bus=Business subgroup, Eng=Engineering subgroup, Full=Full Professor subgroup, Asso=Associate Professor subgroup, Assi=Assistant Professor subgroup.

Table 3

Goodness-of-fit indices for models positing First-Order (FO) and Second-Order (SO) factors for total group

Model	Number of factors			Goodness-of-fit indices		
	FO	SO	df	χ^2	TLI	RNI
HO^n	8	0	377	238,123	-	-
H1	8	1	369	33,264	.859	.861
H2	8	2	368	32,324	.862	.866
H3	8	3	366	32,040	.863	.867

Note. HO^n=Higher-Order null model in which all first-order factors are uncorrelated

Table 4

Higher-order factor (HOF) correlations for total group and subgroups

	HOF 1	HOF 2	HOF 3
Total group			
HOF 1	-		
HOF 2	.900	-	
HOF 3	.943	.874	-
Social Science			
HOF 1	-		
HOF 2	.863	-	
HOF 3	.941	.894	-
Business			
HOF 1	-		
HOF 2	.898	-	
HOF 3	.956	.849	-
Engineering			
HOF 1	-		
HOF 2	.921	-	
HOF 3	.941	.868	-

	HOF 1	HOF 2	HOF 3
Full Professor			
HOF 1	-		
HOF 2	.890	-	
HOF 3	.934	.856	-
Associate Professor			
HOF 1	-		
HOF 2	.895	-	
HOF 3	.946	.881	-
Assistant Professor			
HOF 1	-		
HOF 2	.917	-	
HOF 3	.949	.881	-

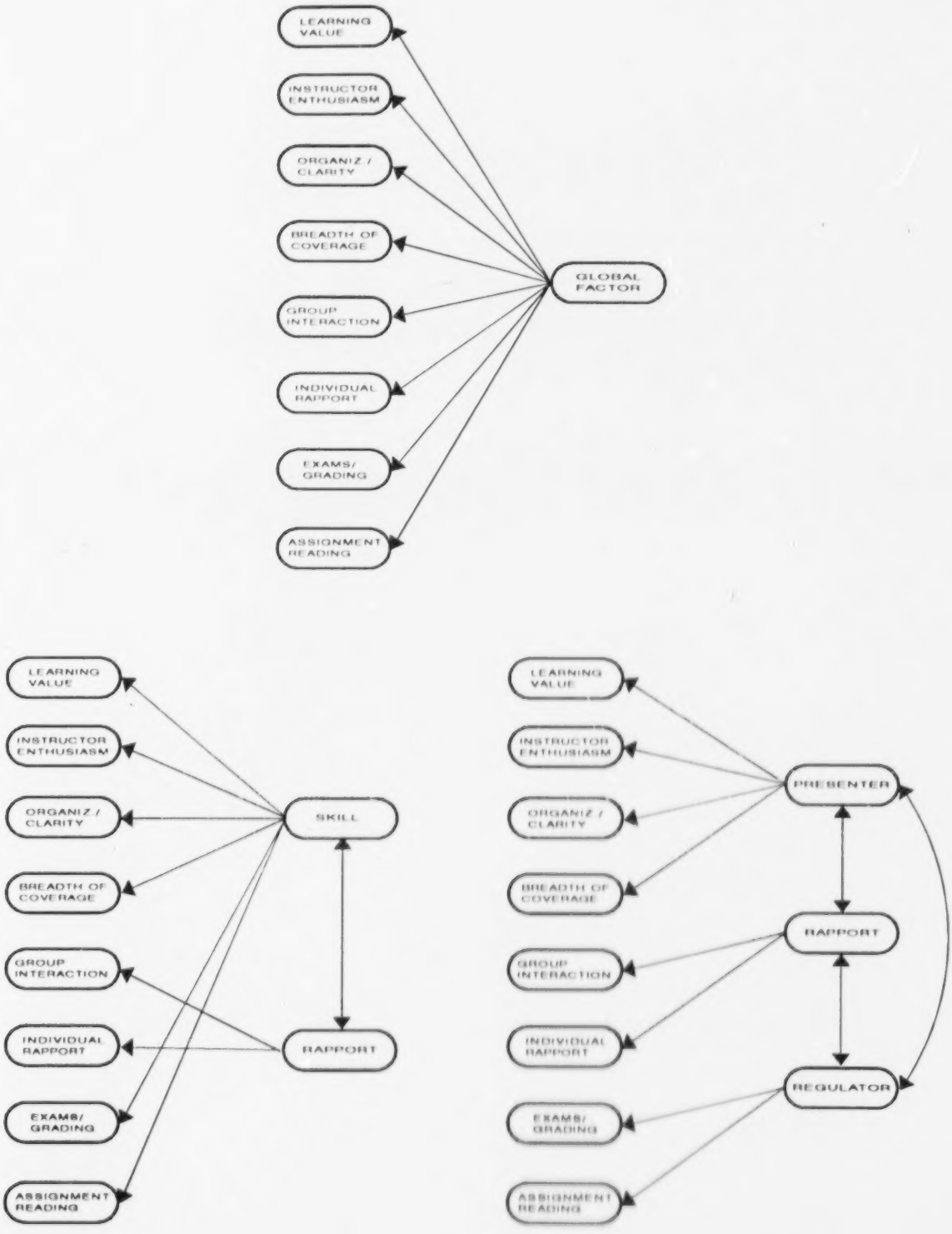

Figure 1. Three second-order factor models

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Appendix A

Students' Evaluations of Educational Quality (SEEQ)

Survey Form

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USC EVALUATION SERVICES

USE NO. 2 PENCIL ONLY

• COMPLETELY ERASE ANY RESPONSE YOU WISH TO CHANGE

SELECT THE BEST RESPONSE FOR EACH OF THE FOLLOWING STATEMENTS, LEAVING A BLANK ONLY IF IT IS CLEARLY NOT RELEVANT

		VERY POOR		MODERATE (AVERAGE)		VERY GOOD
1	**LEARNING:** YOU FOUND THE COURSE INTELLECTUALLY CHALLENGING AND STIMULATING	1	2	3	4	5
2	YOU HAVE LEARNED SOMETHING WHICH YOU CONSIDER VALUABLE	1	2	3	4	5
3	YOUR INTEREST IN THE SUBJECT HAS INCREASED AS A CONSEQUENCE OF THIS COURSE	1	2	3	4	5
4	YOU HAVE LEARNED AND UNDERSTOOD THE SUBJECT MATERIALS IN THIS COURSE	1	2	3	4	5
5	**ENTHUSIASM:** INSTRUCTOR WAS ENTHUSIASTIC ABOUT TEACHING THE COURSE	1	2	3	4	5
6	INSTRUCTOR WAS DYNAMIC AND ENERGETIC IN CONDUCTING THE COURSE	1	2	3	4	5
7	INSTRUCTOR ENHANCED PRESENTATIONS WITH THE USE OF HUMOR	1	2	3	4	5
8	INSTRUCTOR'S STYLE OF PRESENTATION HELD YOUR INTEREST DURING CLASS	1	2	3	4	5
9	**ORGANIZATION:** INSTRUCTOR'S EXPLANATIONS WERE CLEAR	1	2	3	4	5
10	COURSE MATERIALS WERE WELL PREPARED AND CAREFULLY EXPLAINED	1	2	3	4	5
11	PROPOSED OBJECTIVES AGREED WITH THOSE ACTUALLY TAUGHT SO YOU KNEW WHERE COURSE WAS GOING	1	2	3	4	5
12	INSTRUCTOR GAVE LECTURES THAT FACILITATED TAKING NOTES	1	2	3	4	5
13	**GROUP INTERACTION:** STUDENTS WERE ENCOURAGED TO PARTICIPATE IN CLASS DISCUSSIONS	1	2	3	4	5
14	STUDENTS WERE INVITED TO SHARE THEIR IDEAS AND KNOWLEDGE	1	2	3	4	5
15	STUDENTS WERE ENCOURAGED TO ASK QUESTIONS & WERE GIVEN MEANINGFUL ANSWERS	1	2	3	4	5
16	STUDENTS WERE ENCOURAGED TO EXPRESS THEIR OWN IDEAS AND/OR QUESTION THE INSTRUCTOR	1	2	3	4	5
17	**INDIVIDUAL RAPPORT:** INSTRUCTOR WAS FRIENDLY TOWARD INDIVIDUAL STUDENTS	1	2	3	4	5
18	INSTRUCTOR MADE STUDENTS FEEL WELCOME IN SEEKING HELP/ADVICE IN OR OUTSIDE OF CLASS	1	2	3	4	5
19	INSTRUCTOR HAD A GENUINE INTEREST IN INDIVIDUAL STUDENTS	1	2	3	4	5
20	INSTRUCTOR WAS ADEQUATELY ACCESSIBLE TO STUDENTS DURING OFFICE HOURS OR AFTER CLASS	1	2	3	4	5
21	**BREADTH:** INSTRUCTOR CONTRASTED THE IMPLICATIONS OF VARIOUS THEORIES	1	2	3	4	5
22	INSTRUCTOR PRESENTED THE BACKGROUND OR ORIGIN OF IDEAS/CONCEPTS DEVELOPED IN CLASS	1	2	3	4	5
23	INSTRUCTOR PRESENTED POINTS OF VIEW OTHER THAN HIS/HER OWN WHEN APPROPRIATE	1	2	3	4	5
24	INSTRUCTOR ADEQUATELY DISCUSSED CURRENT DEVELOPMENTS IN THE FIELD	1	2	3	4	5
25	**EXAMINATIONS:** FEEDBACK ON EXAMINATIONS/GRADED MATERIALS WAS VALUABLE	1	2	3	4	5
26	METHODS OF EVALUATING STUDENT WORK WERE FAIR AND APPROPRIATE	1	2	3	4	5
27	EXAMINATIONS/GRADED MATERIALS TESTED COURSE CONTENT AS EMPHASIZED BY THE INSTRUCTOR	1	2	3	4	5
28	**ASSIGNMENTS:** REQUIRED READINGS/TEXTS WERE VALUABLE	1	2	3	4	5
29	READINGS, HOMEWORK, ETC. CONTRIBUTED TO APPRECIATION AND UNDERSTANDING OF SUBJECT	1	2	3	4	5
30	**OVERALL:** COMPARED WITH OTHER COURSES YOU HAVE TAKEN AT USC, THIS COURSE WAS . . ?	1	2	3	4	5
31	**OVERALL:** COMPARED WITH OTHER INSTRUCTORS YOU HAVE HAD AT USC, THIS INSTRUCTOR WAS . . ?	1	2	3	4	5
	STUDENT AND COURSE CHARACTERISTICS: (LEAVE BLANK IF NO RESPONSE APPLIES)					
32	COURSE DIFFICULTY, RELATIVE TO OTHER COURSES, WAS (1-VERY EASY . . . 3-MEDIUM . . . 5-VERY HARD)	1	2	3	4	5
33	COURSE WORKLOAD, RELATIVE TO OTHER COURSES, WAS (1-VERY LIGHT 3-MEDIUM 5-VERY HEAVY)	1	2	3	4	5
34	COURSE PACE WAS (1-TOO SLOW 3-ABOUT RIGHT 5-TOO FAST)	1	2	3	4	5
35	HOURS PER WEEK REQUIRED OUTSIDE OF CLASS 1) 0 - 2, 2) 2 - 5, 3) 5 - 7, 4) 7 - 12, 5) OVER 12	1	2	3	4	5
36	LEVEL OF INTEREST IN THE SUBJECT PRIOR TO THIS COURSE (1-VERY LOW . . . 3-MEDIUM . . . 5-VERY HIGH)	1	2	3	4	5
37	OVERALL GPA AT USC 1) BELOW 2.5, 2) 2.5 TO 3.0, 3) 3.0 TO 3.4, 4) 3.4 TO 3.7, 5) ABOVE 3.7 LEAVE BLANK IF NOT YET ESTABLISHED AT USC	1	2	3	4	5
38	REASON FOR TAKING THE COURSE (1-MAJOR REQUIRE., 2-MAJOR ELECTIVE, 3-GENERAL ED REQUIRE., 4-MINOR/RELATED FIELD, 5-GENERAL INTEREST ONLY)—SELECT THE ONE WHICH IS BEST	1	2	3	4	5
39	YEAR IN SCHOOL 1) FRESH., 2) SOPH., 3) JR., 4) SR., 5) GRAD	1	2	3	4	5
40	EXPECTED GRADE IN THE COURSE (1-A, 2-A-, 3-B+, 4-B, 5-B-, 6-C+, 7-C, 8-C-, 9-D, 10-F)	1	2	3	4	5
		6	7	8	9	10
41	MAJOR DEPARTMENT 1) SOC SCI/COMM., 2) NAT SCI/MATH., 3) HUMANITIES, 4) BUSINESS, 5) EDUCATION	1	2	3	4	5
	6) ENGINEERING, 7) PERF. ARTS, 8) PUB. AFFAIRS, 9) OTHER, 10) UNDECLARED/UNDECIDED	6	7	8	9	10

SUPPLEMENTAL QUESTIONS (USE RESPONSES BELOW FOR INSTRUCTOR'S QUESTIONS)

42 ①②③④⑤	46 ①②③④⑤	50 ①②③④⑤	54 ①②③④⑤
43 ①②③④⑤	47 ①②③④⑤	51 ①②③④⑤	55 ①②③④⑤
44 ①②③④⑤	48 ①②③④⑤	52 ①②③④⑤	56 ①②③④⑤
45 ①②③④⑤	49 ①②③④⑤	53 ①②③④⑤	57 ①②③④⑤

INSTRUCTOR'S NAME DEPARTMENT NAME COURSE NUMBER